

An additional drawback, therefore, is represented by the impossibility of throttling the plant, without compromising the asepsis of the product at the end of the treatment.

DISCLOSURE OF INVENTION.

- 5 An aim of the present invention is to eliminate the aforesaid drawbacks making available a method for sterilising food products, in particular purees and/or concentrates, which allows uniformly to heat the product to be treated, without any deterioration of its quality.

An additional aim of the present invention is to propose a sterilising method
10 that allows to throttle the plant, without compromising the asepsis of the final product.

Another aim of the present invention is make available a method that allows a chemical-physical homogenisation of the product, drastically reducing its degradation.

- 15 A further aim of the present invention is to propose a sterilisation method that is simple and economical to implement.

Said aims are fully achieved by the method for sterilising food products, in particular purees and/or concentrates, of the present invention, which is characterised by the content of the claims set out below and in particular in
20 that the method provides for executing the mixing step by means of at least a dynamic mixer.

BRIEF DESCRIPTION OF DRAWINGS.

This and other characteristics shall become more readily apparent from the following description of a preferred embodiment of the method illustrated,
25 purely by way of non limiting example, in the accompanying drawing tables,

a static mixer.

Figure 3 shows, purely by way of example, a possible embodiment of a static mixer able to carry out the aforesaid mixing step in accordance with the method.

5 With reference to Figure 3, the static mixer is globally indicated with the number 5 and comprises a tubular body 6 inside which flows the product, typically food puree or concentrate, a plurality of fixed baffles 7, positioned inside the tubular body and so shaped as to operate continuous deviations of the product and separation of the threads, to allow its mixing by effect of the
10 turbulence that develops.

Figure 1 shows a possible embodiment of the method according to the invention.

The product flows inside a conduit 100, which has undulated inner walls in accordance with the prior art and is provided with a plurality of steam
15 injectors 200.

Subsequently, the heated product flows inside one or more static mixers 105, which perform a first coarse mixing to uniform the temperature of the product.

Thereafter, the pre-mixed product reaches a dynamic mixer 101 which
20 performs a fine mixing, uniforming the temperature of the product and assuring its sterilisation.

According to an embodiment variation, the heating and mixing steps can be simultaneous. In this case, the steam injection takes place by means of a plurality of nozzles preferably associated directly to the dynamic mixer,
25 thereby obtaining a single processing stage.

The method of the invention achieves important advantages.

First of all, such a method allows to heat the product in uniform fashion, assuring temperature stability and guaranteeing asepsis. In particular, the use of a dynamic mixer allows a chemical-physical homogenisation of the product, drastically reducing its degradation and safeguarding the organoleptic characteristics such as taste and colour, or the physical characteristics, such as viscosity and consistency.

Secondly, a mixing step carried out by means of dynamic mixers allows to throttle the plant, without compromising a uniform temperature distribution inside the product and thus guaranteeing the asepsis of the final product.

Advantageously, said method is simple and economical to implement and can be used to sterilise even products with high viscosity.

Another advantage is represented by the fact that, given the presence of dynamic mixers, the static mixers and the undulated conduits into which the steam is injected can have reduced length, since the turbulence created by them in the product is not the sole source of mixing action. Thanks to conduits of reduced length, therefore, it is possible to reduce head losses inside the plant, achieving considerable energy savings and lower pressures of the injected steam. This is even more readily apparent if the heating step is simultaneous with the mixing step and both take place inside a dynamic mixer, in accordance with the described embodiment variation.

CLAIMS

1. Method for sterilising food products, in particular purees and/or concentrates, comprising the steps of:
heating the product by injection of steam at predetermined temperature;
5 mixing the product to allow a substantially uniform distribution of the steam;
characterised in that the mixing step takes place by means of at least a dynamic mixer.
2. Method as claimed in claim 1, characterised in that the dynamic mixer comprises:
10 at least a tank for collecting the product;
at least an agitator associated with the tank and operatively active on the product to mix it;
means for actuating the agitator.
3. Method as claimed in claim 1, characterised in that it further comprises
15 a step of mixing the product by means of at least a static mixer.
4. Method as claimed in claim 3, characterised in that the static mixer comprises:
at least a tubular body within which the product flows;
a plurality of fixed baffles, positioned inside the tubular body and so shaped
20 as to operate continuous deviations of the product, to allow its mixing.
5. Method as claimed in claim 1, characterised in that the heating and mixing steps are simultaneous.
6. Method as claimed in claim 5, characterised in that the steam injection takes place by means of a plurality of nozzles directly associated with the
25 dynamic mixer.